Office of Satellite Data Processing and Distribution

Suitland, Maryland

Information Processing Division (IPD)
- Product Systems Branch
- Computer Operations Branch
- Satellite Active Archive (SAA)

Direct Services Division (DSD)
- Direct Satellite Readout
- Search and Rescue Satellite Aided Tracking
- GOES Data Collection
- ARGOS Data Collection

Satellite Services Division (SSD)
- Interactive Processing Branch
- Satellite Analysis Branch

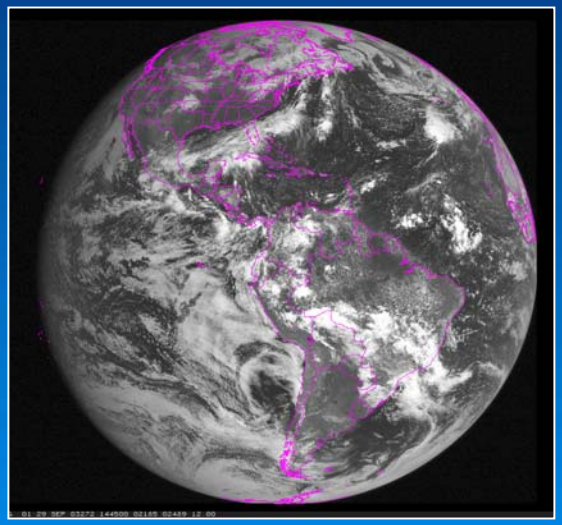
Satellite Services Division

Serves as NOAA/NESDIS focal point for providing high quality, real time global satellite-derived products, interpretive analyses, and other information.

These services, provided by professional meteorologists, support domestic and international meteorological warnings and forecasts, numerical weather models, climate analyses, and other initiatives within the Federal government.

GOES Satellite Data

GOES Data used to monitor for disasters…

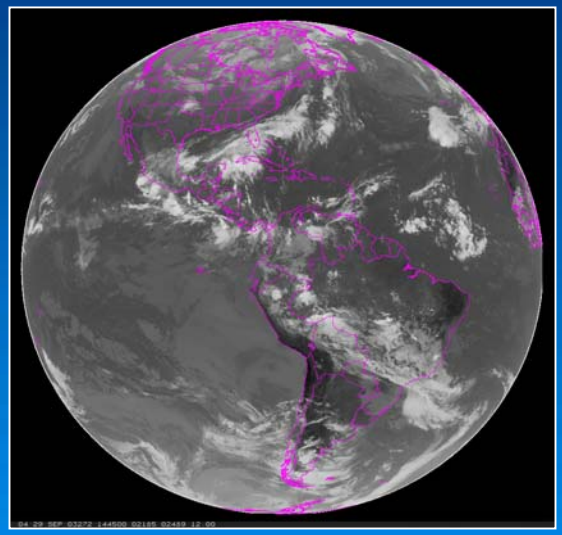


Channel 1 (Visible) 0.65 μm

1 km resolution

Albedo Brightness

Developing cumulus, convergence lines, overshooting tops, snow cover.

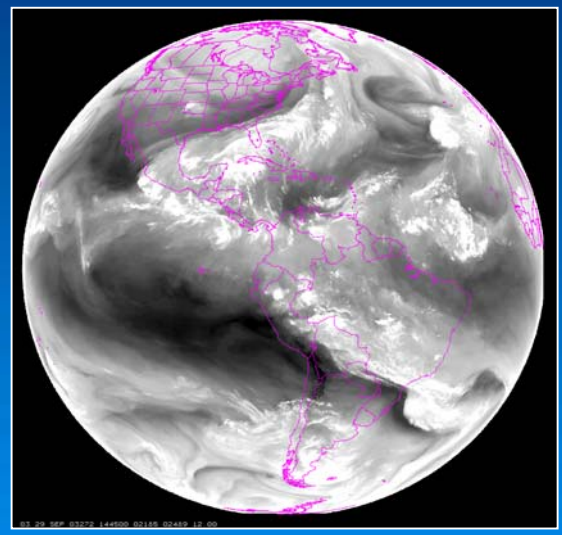


Channel 4 (Infrared) 10.7 μm

4 km resolution

Cloud Top Temperature

Cloud top height/temp, night time clouds, high cirrus, cloud movement/growth



Channel 3 (Water Vapor) 6.5 μm

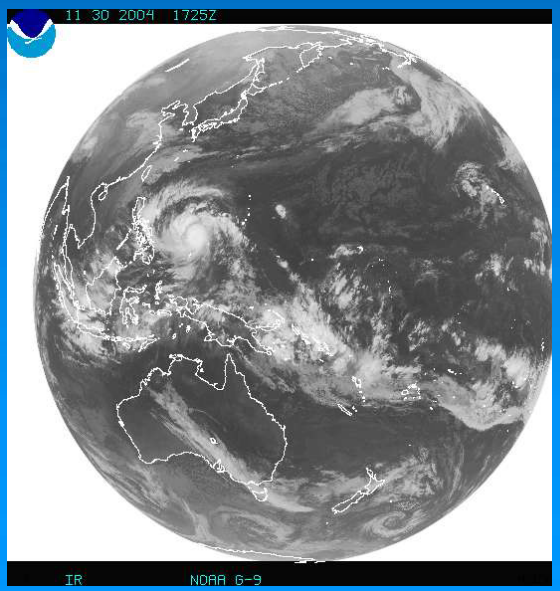
4 km GOES-12/8 km GOES 10/9

Mid troposphere temp.

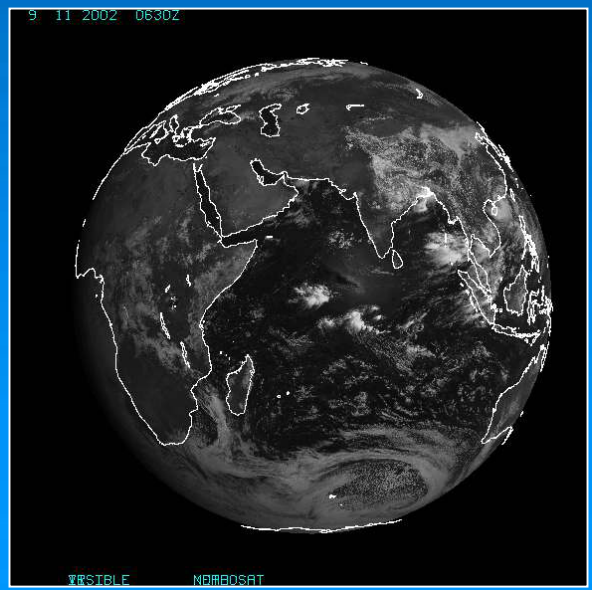
Jet stream/vorticity, temp/moisture in mid troposhpere/shortwave troughs

Geostationary Satellite Data Used by SSD

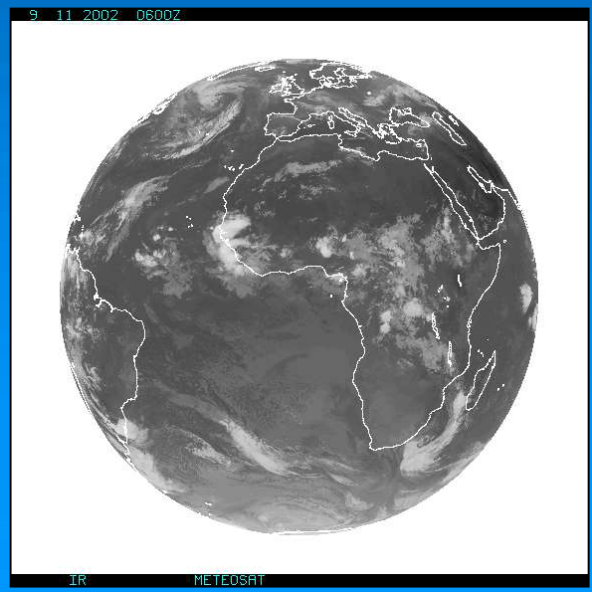
- GOES-12 at 75 degrees West
- GOES-10 at 135 degrees West
- Meteosat-7 at 0 degrees
- GOES-9 at 155 degrees East
  - GOES-9 replaced aging GMS-5 in 2003
- Meteosat-5 at 63 degrees East



GOES-9



METEOSAT-5



METEOSAT-7

Man computer Interactive Data Analysis System (McIDAS)

- Developed by the Space Science Engineering Center at the University of Wisconsin
- Hardware and Software
  - Ingestors read GVAR from Antenna downlink
  - Servers to remap and store GVAR and other data (polar, models, radar, weather text, weather binary, etc)
  - Clients to pull and display data using ADDE

GOES Data Products

Tropical Cyclone Classifications

Fire Detection And Analysis

Snow/Ice Analysis

Volcano Hazards Alerts

Quantitative Precipitation Estimates

Special Event Imagery

Interpretive Products

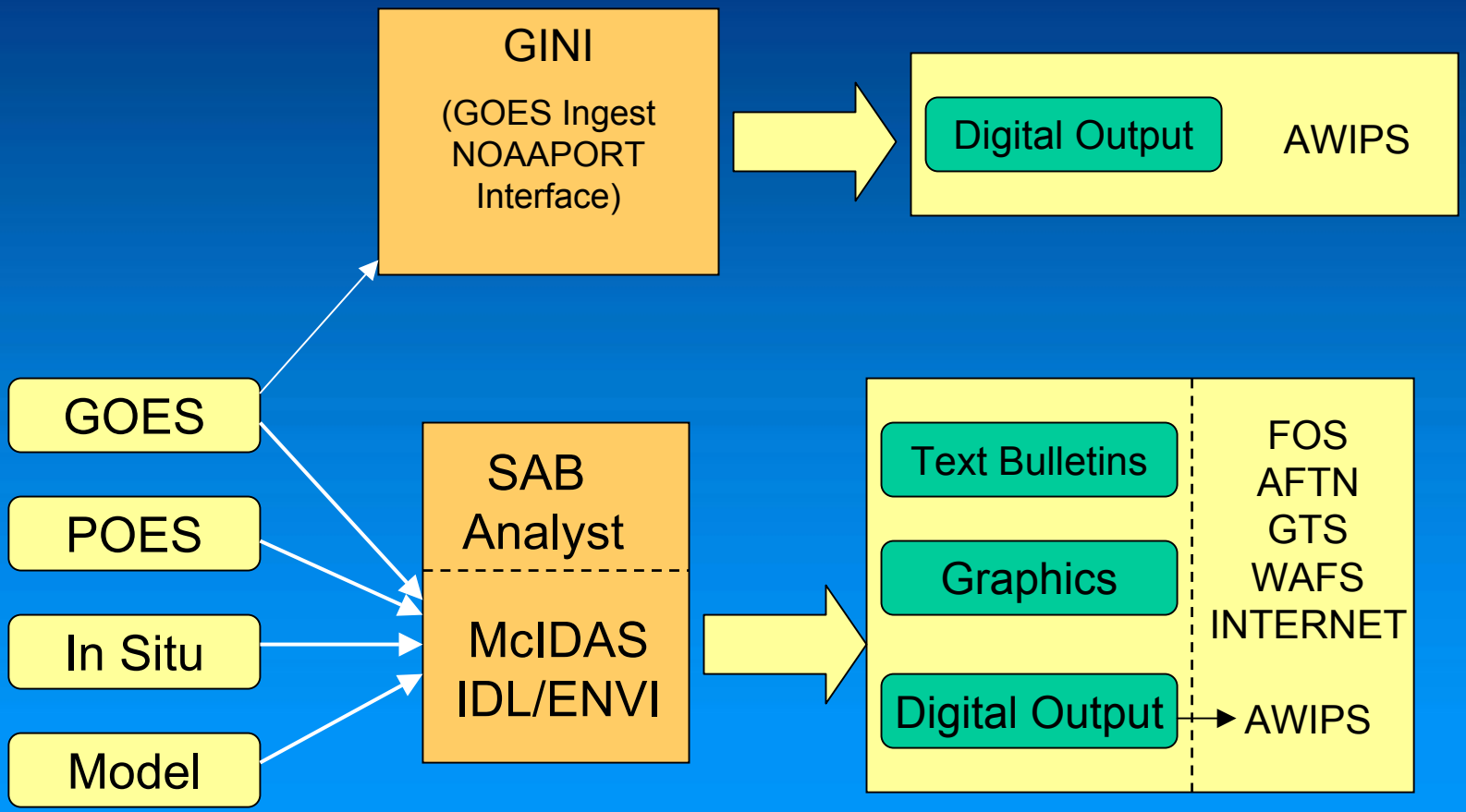
GOES Imager/Sounder Derived Product Imagery

Automated ASOS SCP

Remapped GOES IR, VIS, and Water Vapor Sectors

Automated Products

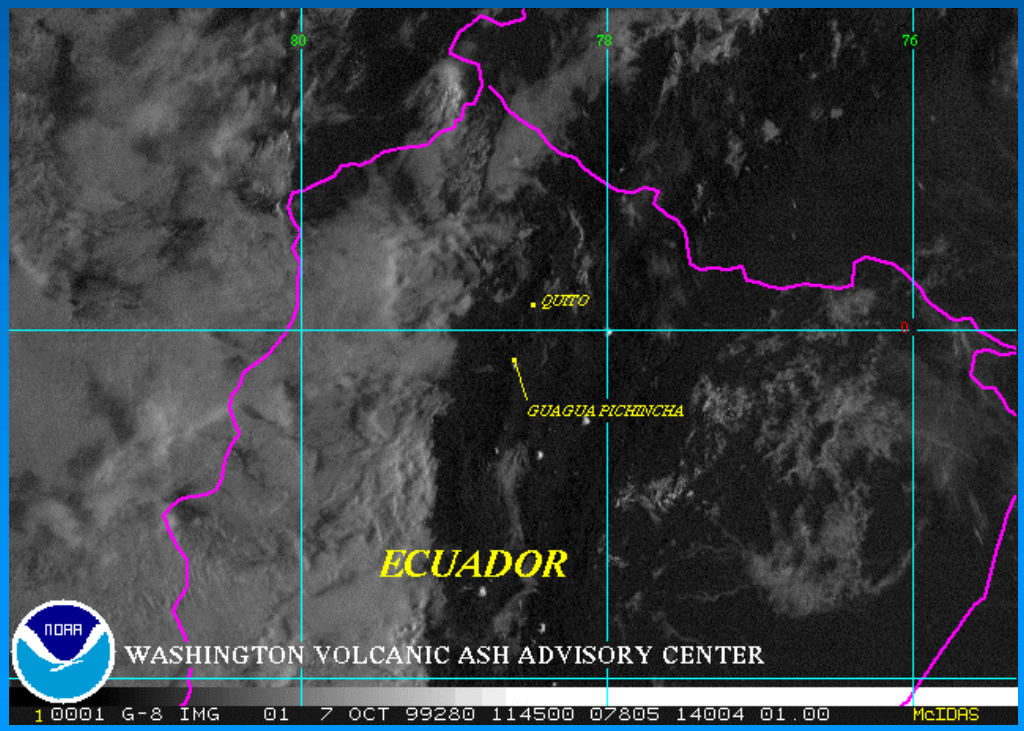
GOES Data Dissemination



SSD Products and Services

Volcanic Ash Analysis

Washington Volcanic Ash Advisory Center (VAAC)



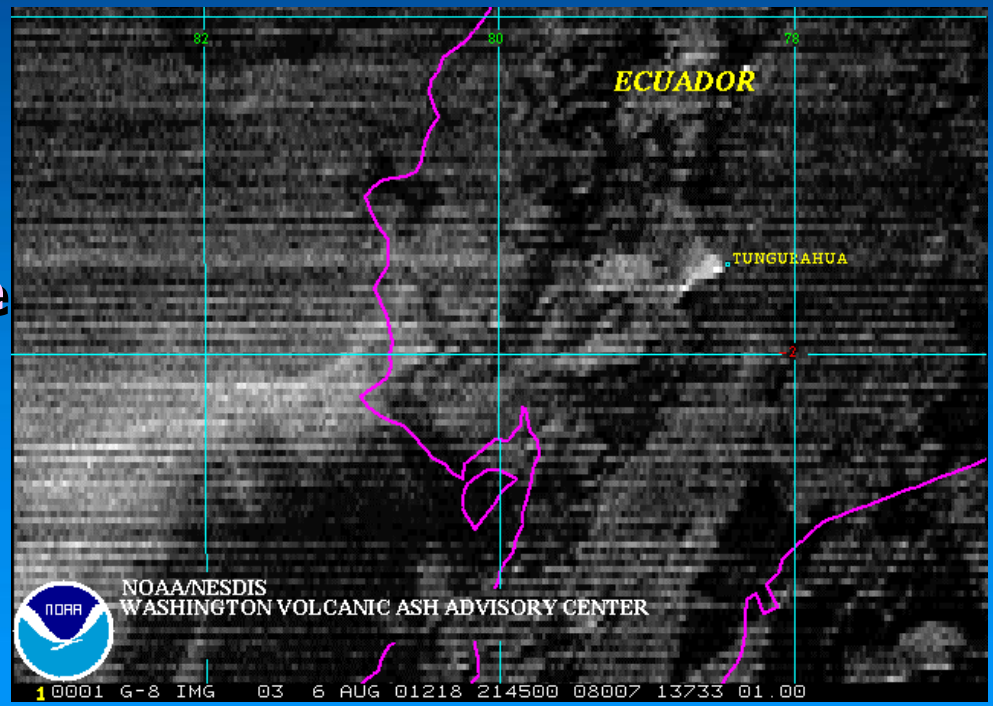
- Uses McIDAS to display and draw outline of ash visible in multichannel GOES imagery.
- Utilizes IMGOPER to perform multispectral analysis of different Infrared channels to isolate ash emmissivity, ability to differentiate ash from water cloud.

SSD Products and Services

Volcanic Ash Analysis

Ash Analysis using Principle Component Imagery (PCI)

- McIDAS analysis of three infrared channels (3.9, 10.7, and 12 μm) output with weights applied to each channel based on the eigenvector/eigenvalue analysis of the original imagery.
- Very useful for isolating ash radiance when environment does not remain constant

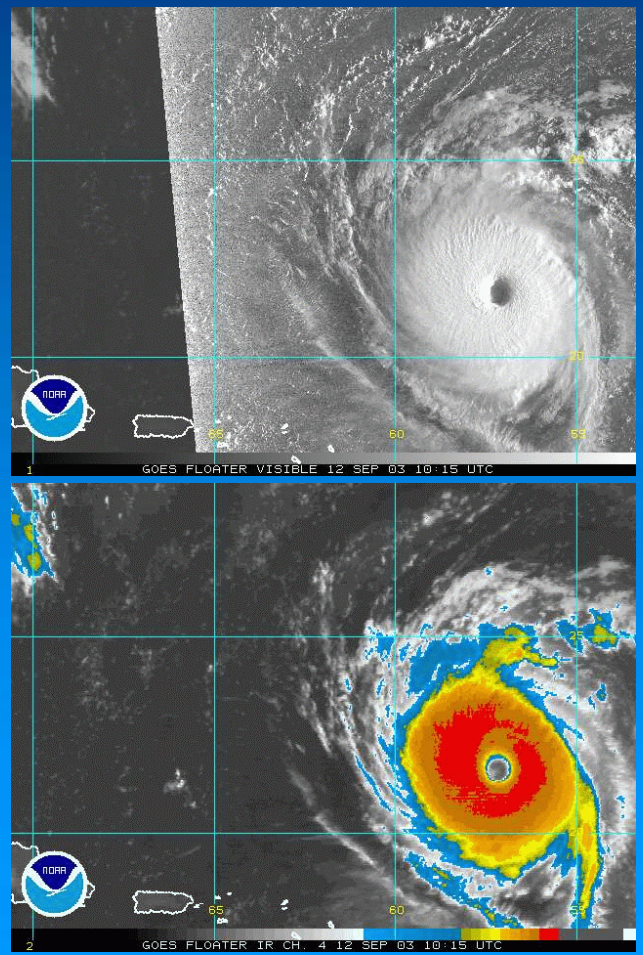


SSD Products and Services

Tropical Storm Positioning and Intensity

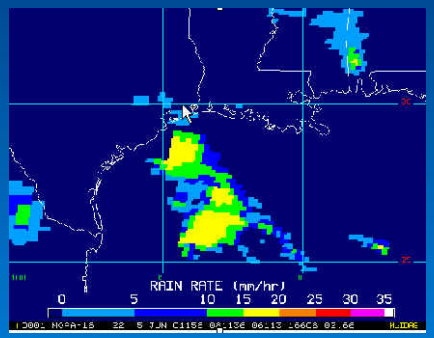
- Global analysis of Geostationary and Polar Orbiting data
- Satellite fixes on storm centers every six hours

- Western Hemisphere – data sent to NHC, CPHC
- Eastern Hemisphere – data sent to NOAA Family of Services as text bulletin



SSD Products and Services

Tropical Rainfall Potential (TRaP)



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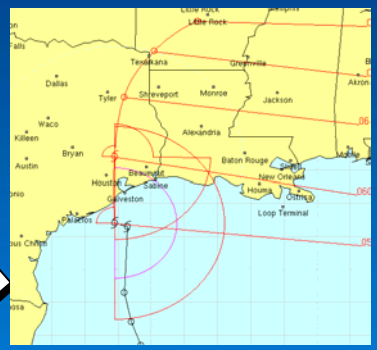
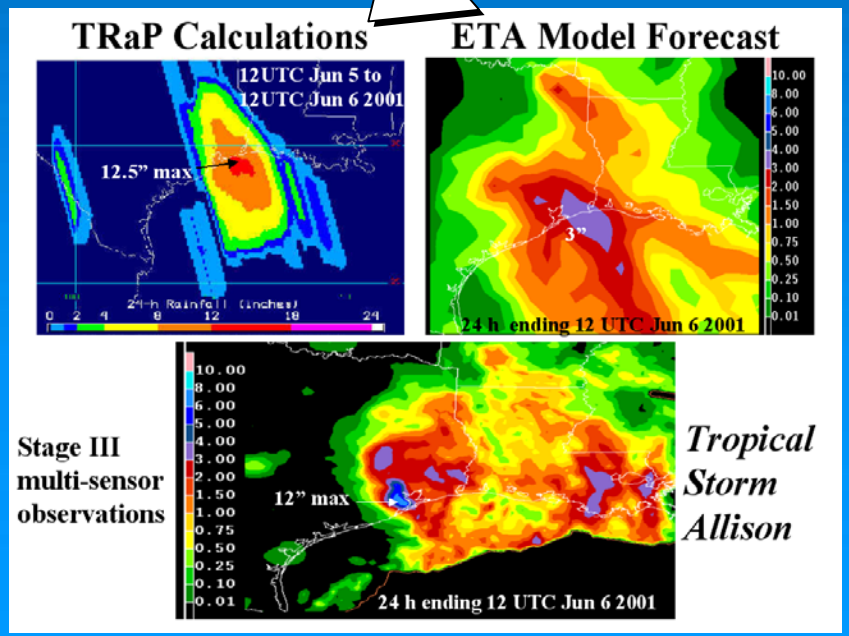


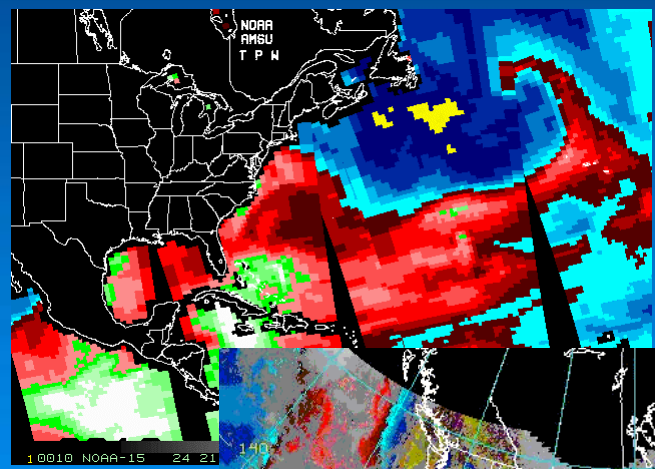


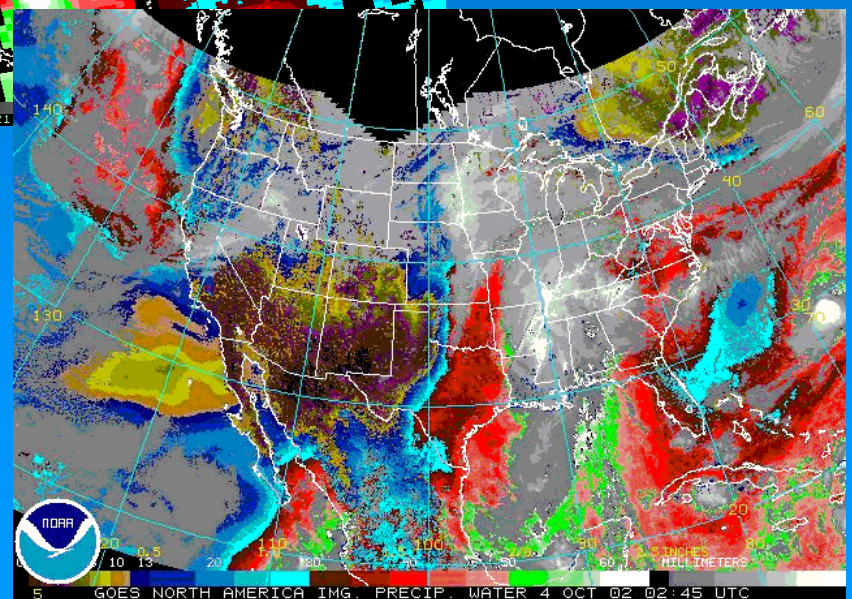
- Calculates an objective rainfall potential map from the latest Rain Rates
- Extrapolates using McIDAS to 24 hours by every 6 hours using the latest NHC, CPHC, or JTWC forecast track
- Now fully automated – will run for every forecast and every latest rain rate produced
- Can be used with SSM/I, AMSU, TRMM, or GOES Multispectral Rain Rates

SSD Products and Services

Heavy Rain/Snow Analysis and NOWCasting

- Looping McIDAS imagery used to identify movements and trends in specific meteorological parameters such as Precipitable Water, Rain Rate, Cloud Liquid Water, Jet Streams, waves, Vorticity centers, etc.
- Analysis of data given to NWS HPC as part of Precip forecasts and to NWS offices in Satellite Precip. Estimate Messages

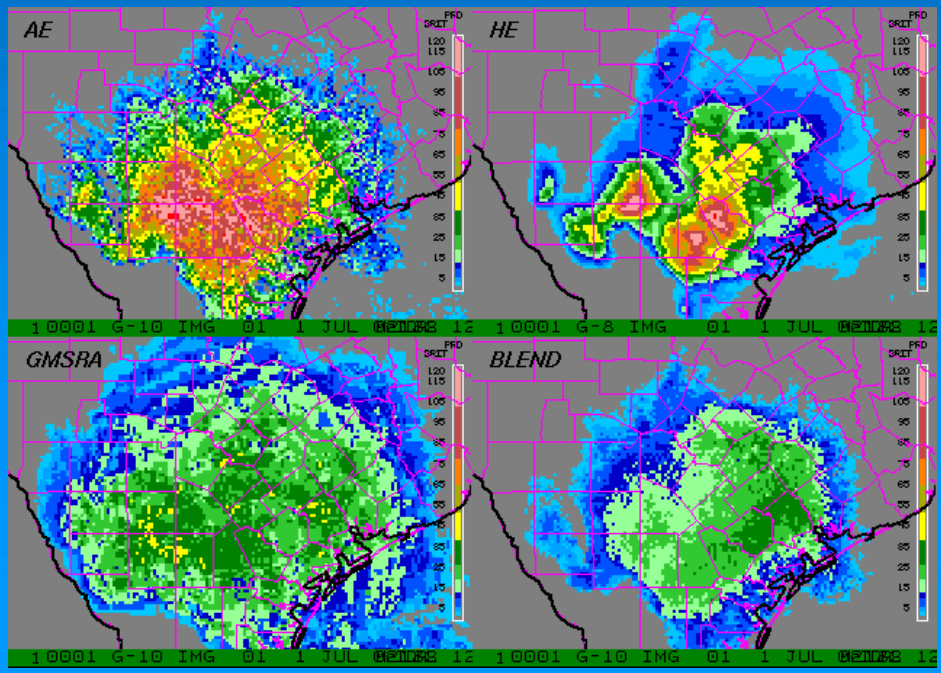


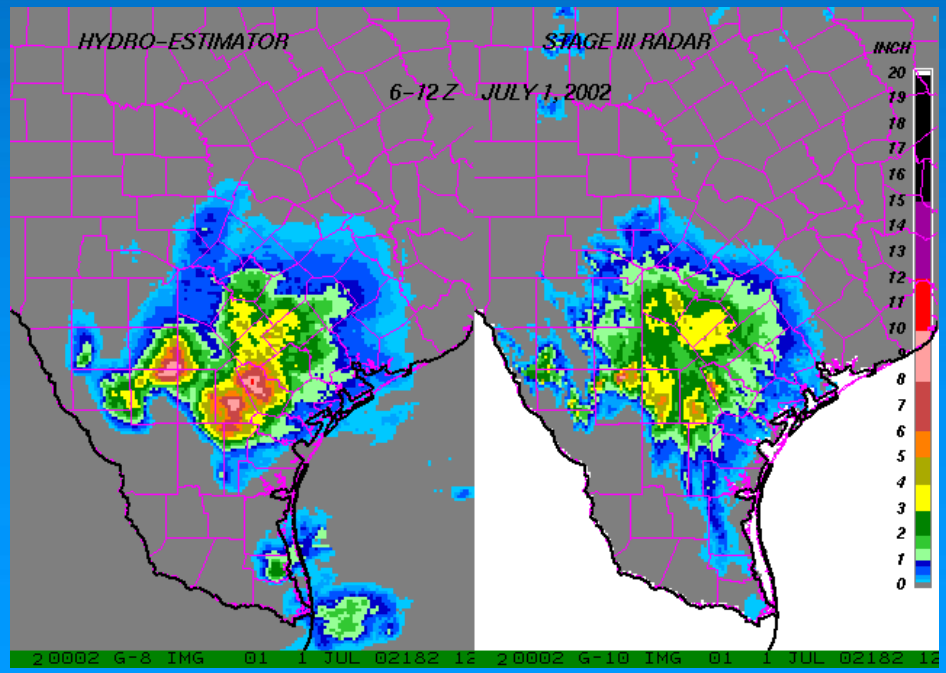


SSD Products and Services

The AutoEstimator and Hydro-Estimator

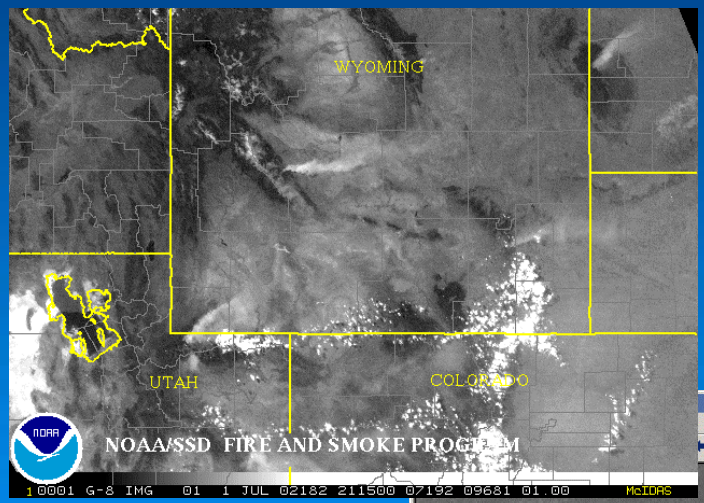
McIDAS based algorithm that blends GOES, POES, Model, and Radar data into one product that will analyze precipitation amounts every 15 minutes and produce quantitative precipitation totals.

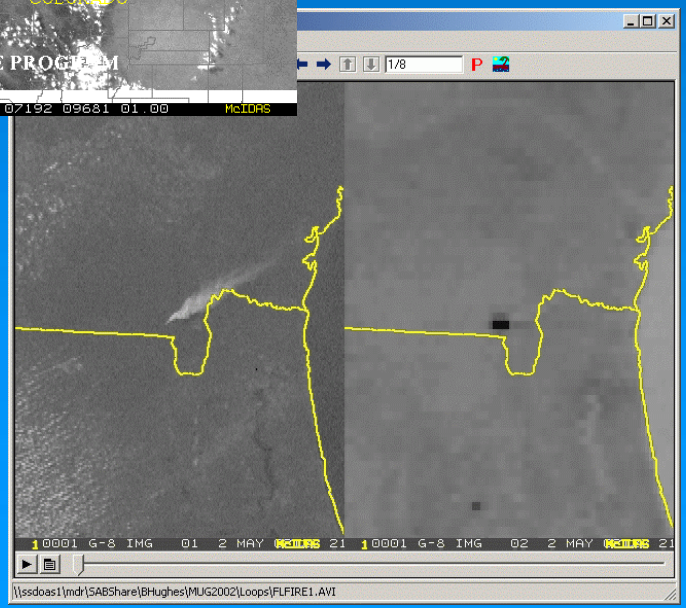




SSD Products and Services

U.S. Wildfire and Smoke Analysis



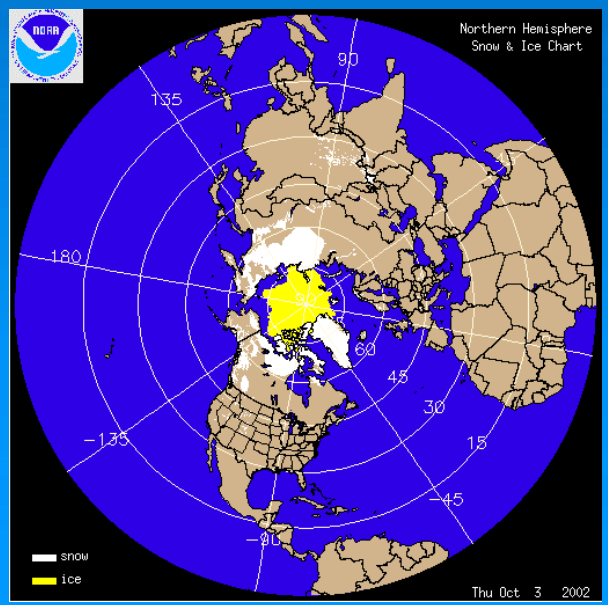


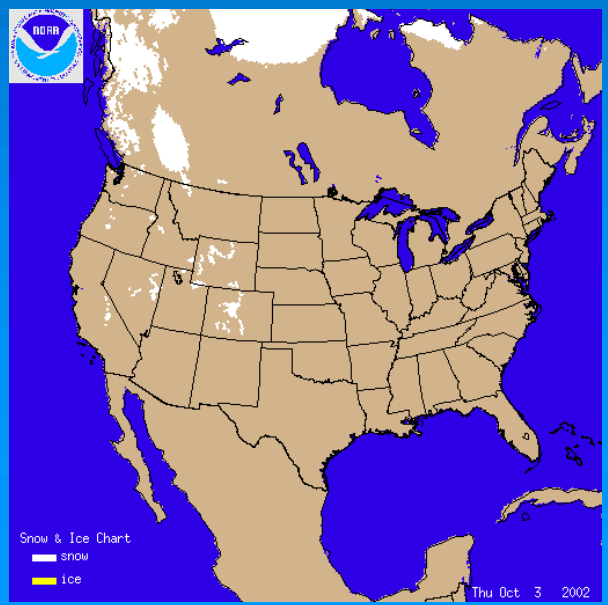
- Program was initiated in 1998 in response to the devastating Florida fires and the thick smoke over Houston, TX from Mexican fires.
- SSD produces a fire/smoke analysis 2x/day using GOES and POES (AVHRR and MODIS) analyzed imagery and automated points (FIMMA, ABBA)

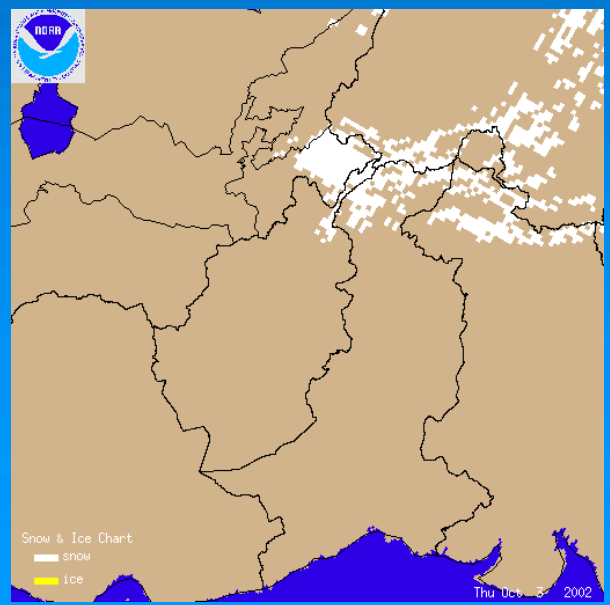
SSD Products and Services

Daily N.H. Snow and Ice Analysis

Satellite Analysis Branch meteorologists produce a daily snow and ice cover map using various satellite data as input, especially fast looping GOES and POES Visible imagery. Analysis is input into operational models.



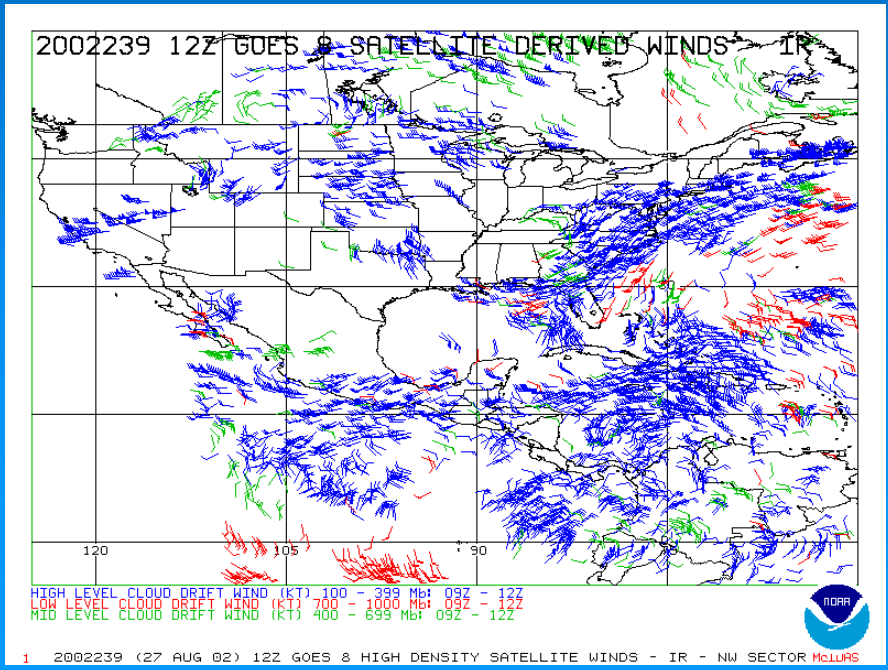


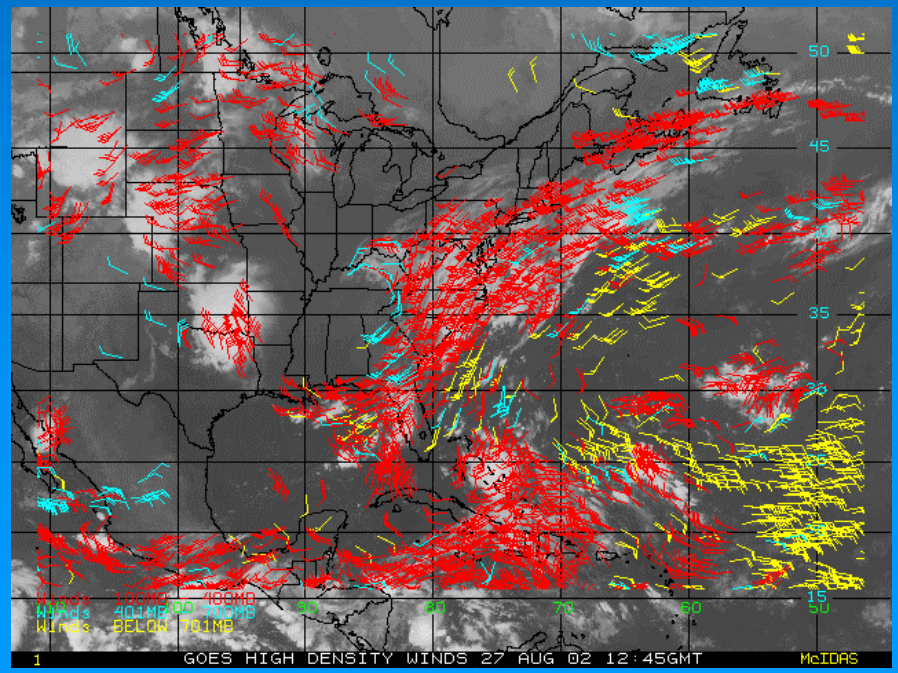


SSD Products and Services

GOES and POES Derived Winds

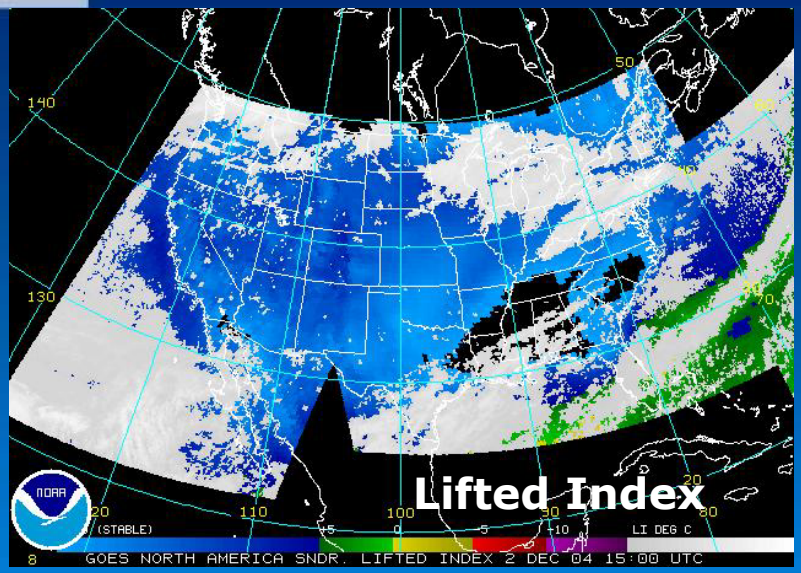
SSD continues to produce high density winds data using McIDAS for input into operational numerical weather prediction models.

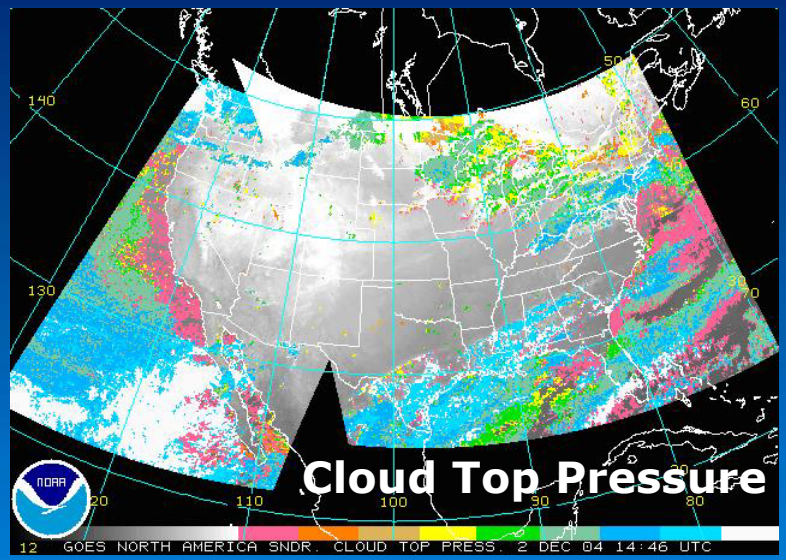


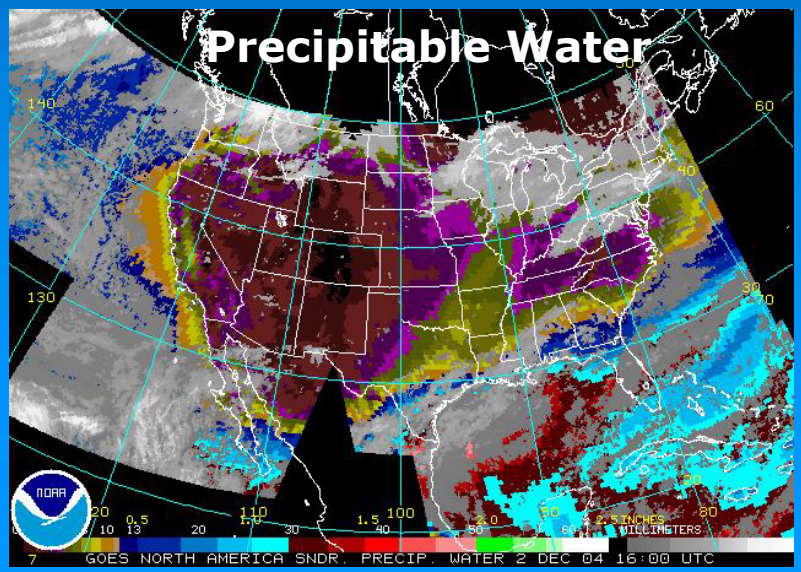


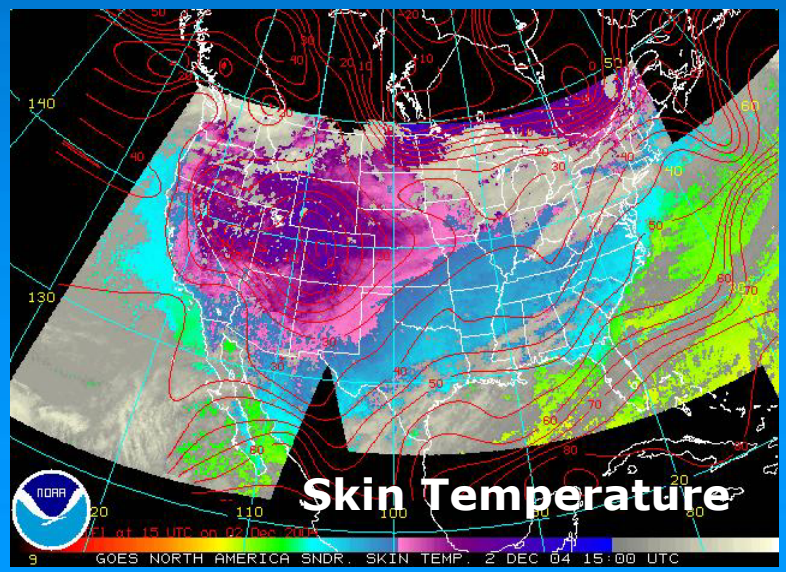
GOES Sounder Derived Products

http://www.ssd.noaa.gov/PS/PCPN/pcpn-na.html





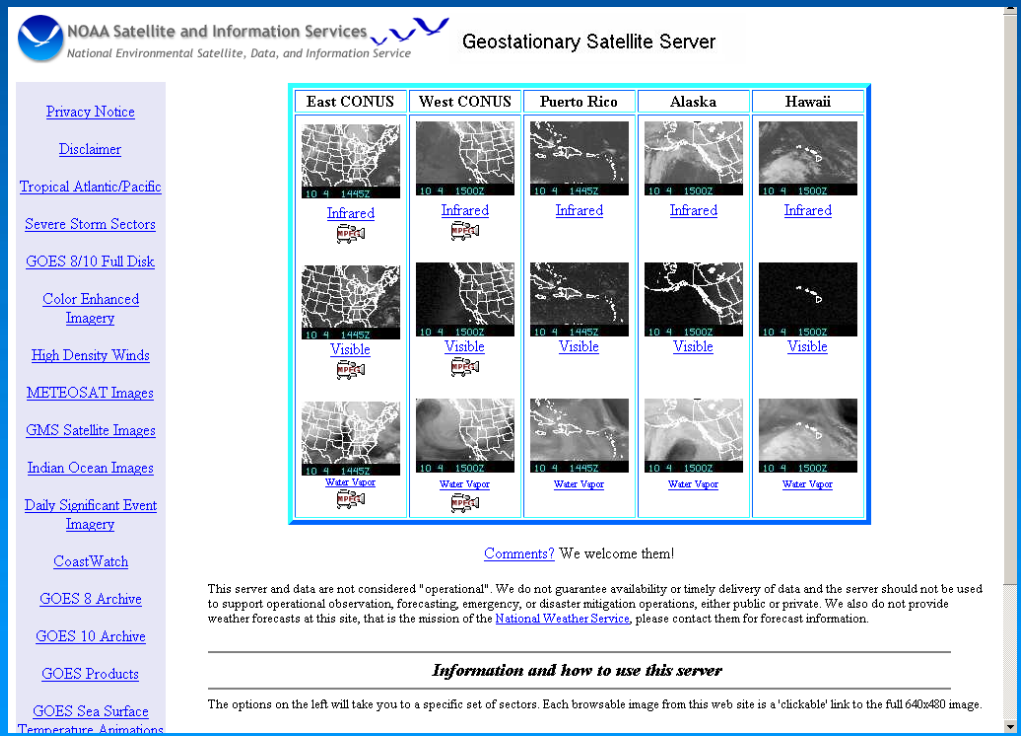




SSD Service to the Public

Public access to real time satellite data through the SSD Web Page

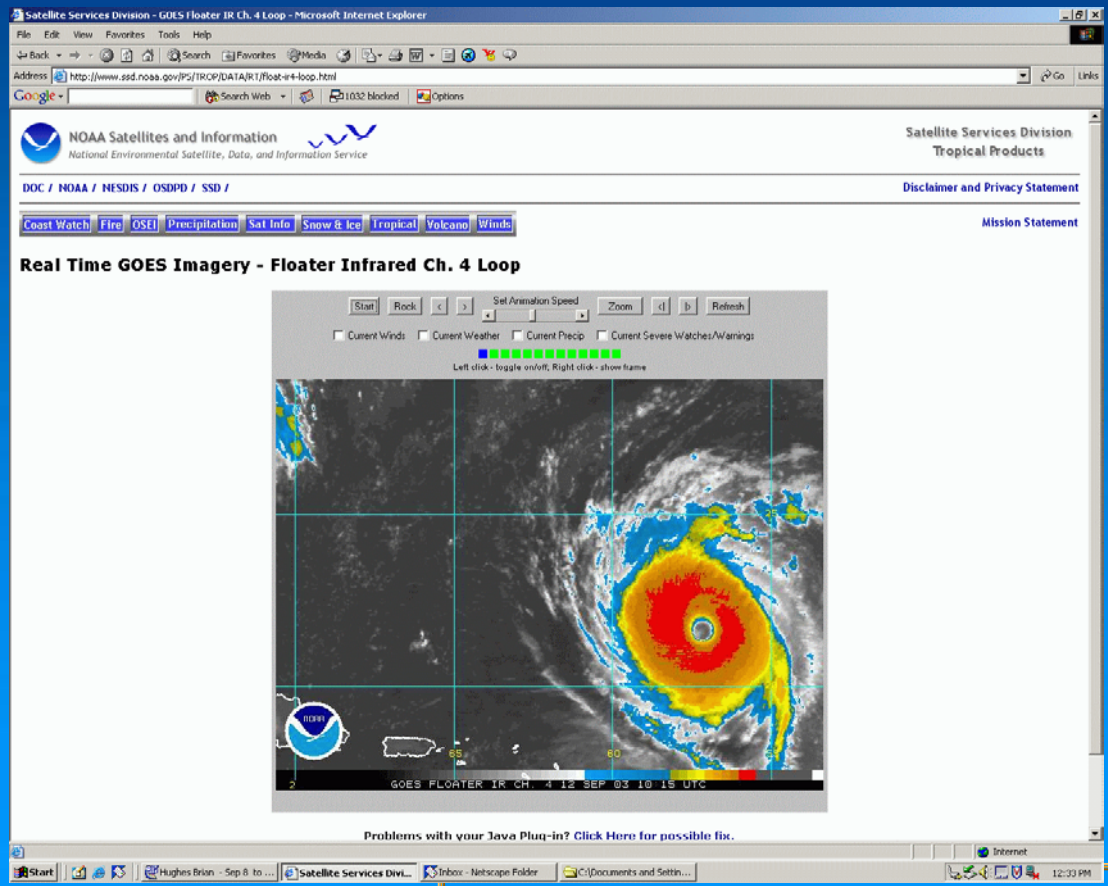
- Access to real time imagery from GOES and POES data ingested at SATEPS.
- Images remapped and displayed in McIDAS are saved as JPEGs and sent to web server every ½ hour



http://www.goes.noaa.gov/

SSD Service to the Public

Public access to real time satellite data through the SSD Web Page



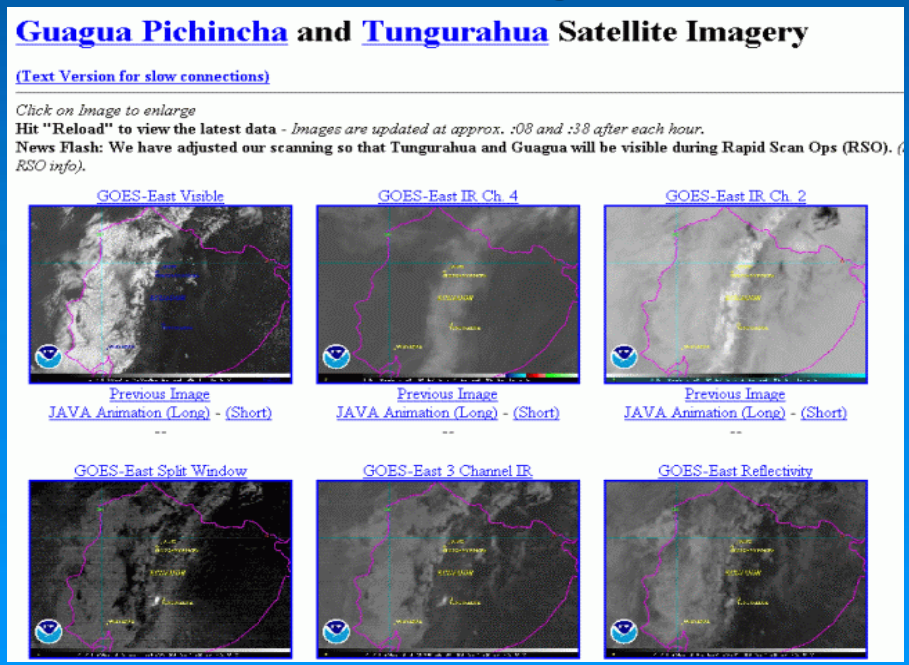
- Real time GOES Data updated every 30 minutes
- Static images and loops allow users to follow specific events
- Client based Java Applets with overlays of meteorological data

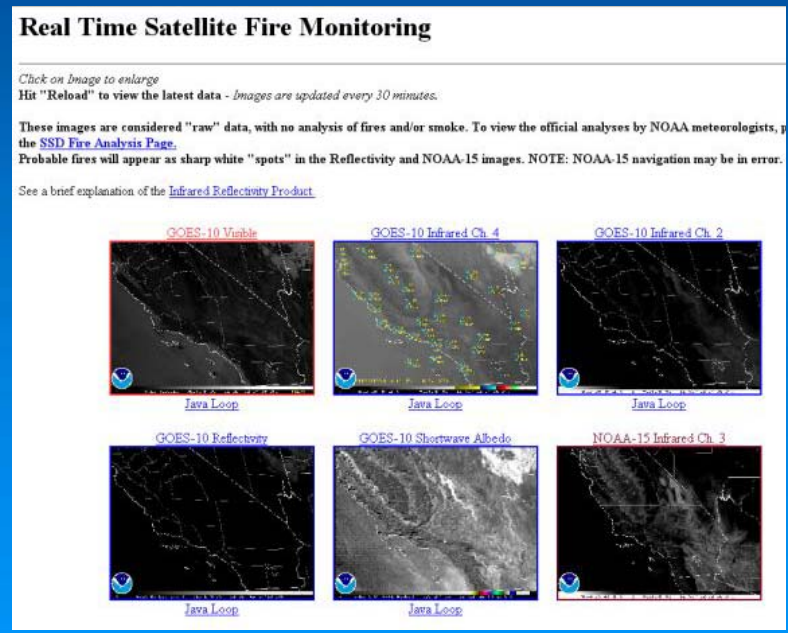
http://www.ssd.noaa.gov/

SSD Service to the Public

Hazard Mitigation: Providing valuable information to the customer

Volcano Monitoring



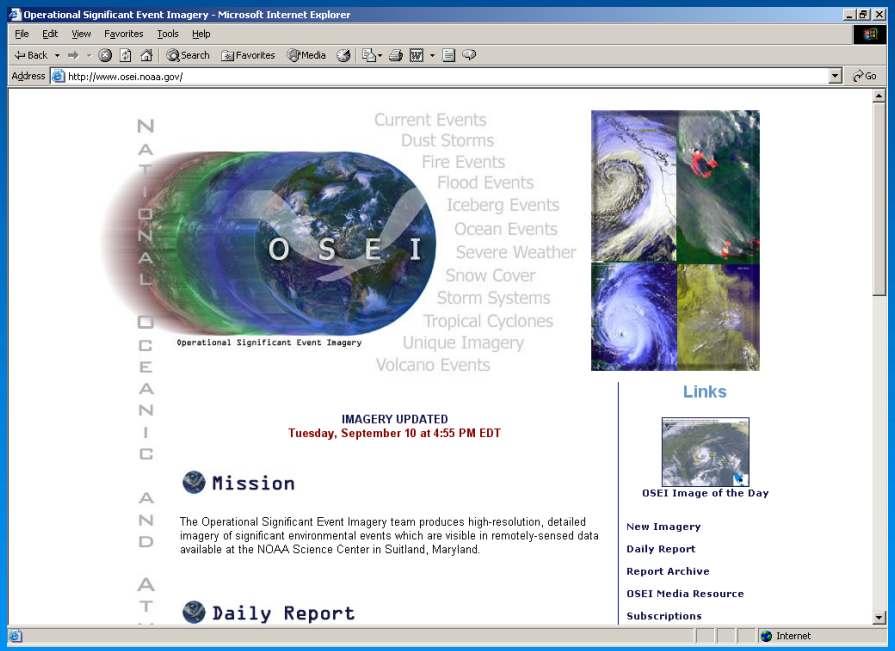


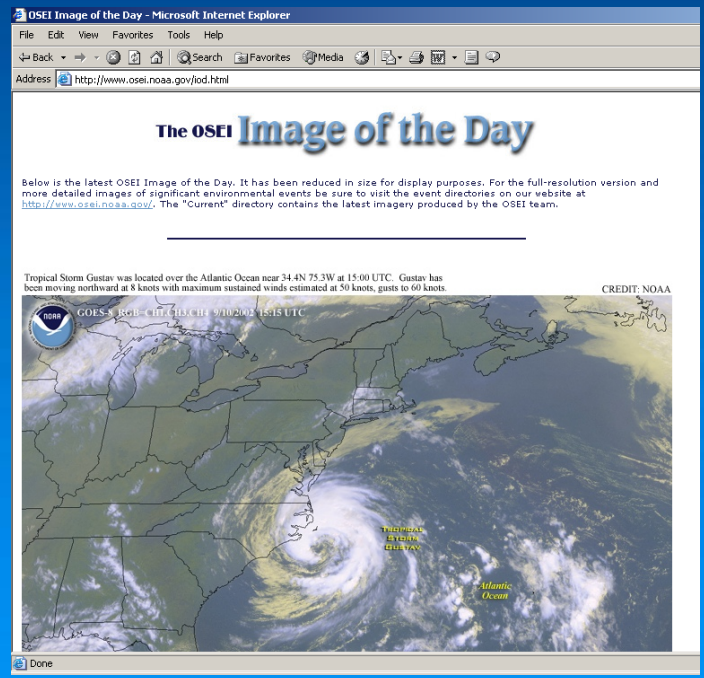
Fire and Smoke imagery

http://www.ssd.noaa.gov/

SSD Service to the Public

High Resolution Imagery for Media





Operational Significant Events Imagery (OSEI)

http://www.osei.noaa.gov/

Satellite Active Archive (NESDIS Office of Systems Development)

http://www.saa.noaa.gov/nsaa/products/welcome